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Region of interest image coding scheme based on skin color detection

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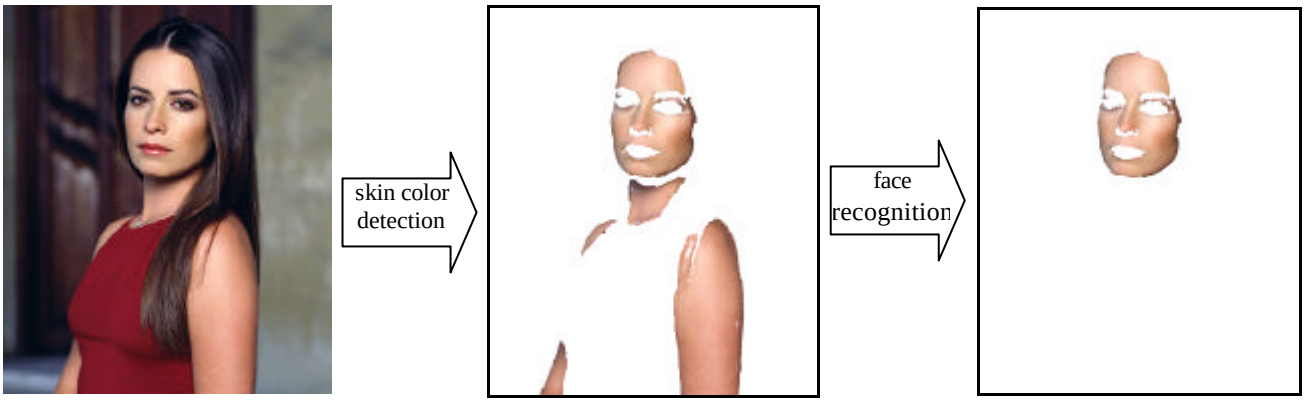
Area of specialization	**Embedded Systems**	

Abstract

Various fields in modern science and engineering include digital image processing applications. Since capturing of digital images continuously becomes easier and cheaper, new applications in personal communications such as videophone are arising. One big effort in engineering research is to achieve high image quality at low bit rates. Depending on the specific application, pictures consist of different regions of interest (ROI). For example in a portrait we tend to pay more attention to the face rather than to the background. However, segmentation of a region of interest is a complex task that decreases the speed of the data encoder.

This diploma thesis presents an algorithm to determine the ROIs in a picture based on skin color detection. Further face recognition algorithms are used to decide whether it is the face or not. After processing a picture with these algorithms, several ROIs are compressed with a higher fidelity compared to the rest of the image. This allows improvements in quality of images independent of available memory size. Furthermore the developed algorithms could be used for face identification, or to pre-process images for subsequent eye-tracking applications.



It should be pointed out that the developed algorithms are designed for implementation on hardware infrastructures. The architectural design can be modelled using hardware description language, and therefore simulated and mapped into a Field Programmable Gate Array (FPGA).